The A-/A′-Distinction in Scrambling Revisited

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1. Introduction

Extending Mahajan's (1990) A-/A′-dichotomy from Hindi scrambling, Saito (1992) claims that in Japanese, clause-internal scrambling can be A-movement, whereas long-distance scrambling (i.e. scrambling out of a clause) is necessarily A′-movement. This bifurcation has been widely accepted; it has in fact been standardly assumed that only scrambling that crosses a CP must be A′-movement.[1]

This paper re-examines the A-/A′-distinction in Japanese scrambling. It provides new data from Left-Branch Extraction (LBE) and movement of conjuncts from coordinated noun phrases, showing that these cases of scrambling necessarily exhibit A′-properties. These two cases provide instances of clause-internal scrambling with obligatory A′-properties, suggesting that the clause-boundary is not the only factor relevant to the A-/A′-dichotomy. We establish a new generalization that not only scrambling out of clauses but also scrambling out of noun phrases is necessarily A′-scrambling. To account for this, we propose a phase-based characterization of the A-/A′-distinction in scrambling. We argue that the A-/A′-distinction in scrambling correlates with whether scrambling takes place within a transfer domain.

This paper is organized as follows. § 2 reviews the facts which have motivated the difference between clause-internal and long-distance scrambling. Based on the diagnostics reviewed in § 2, § 3 investigates the properties of LBE and movement of a conjunct, showing that scrambling in question can only be A′-movement. § 4 puts forth our proposal, showing that the proposed analysis correctly predicts the A-/A′-properties of scrambling for all of the cases discussed in this paper. § 5 is a conclusion.

2. Clause-internal vs. Long-distance Scrambling

Saito (1992) and Tada (1993) show that clause-internal scrambling and long-distance scrambling show different behavior in a number of respects. Consider first scope. (1a) is a base-line sentence where a subject and an indirect object are quantifiers. Since Japanese is a scope-rigid language, the subject scopes over the indirect object. (1b) is derived via clause-internal scrambling. It shows that the application of clause-internal scrambling makes the sentence ambiguous:

(1) a. Dareka-ga   minna-e   tegami-o kaita.
       someone-NOM everyone-to letter-ACC wrote
       'Someone wrote a letter to everyone.'
       $\exists > \forall$; *$\forall > \exists$

b. Minna-e$_1$ dareka-ga t_1 tegami-o kaita.
   everyone-to someone-NOM letter-ACC wrote
   '[To everyone]$_1$ someone wrote a letter t_1.'
   $\exists > \forall$; $\forall > \exists$

Long-distance scrambling behaves differently. Consider (2), where a matrix subject and an indirect object of the embedded clause are quantifiers, and the latter has undergone long-distance scrambling. Crucially, there is no ambiguity in (2), which shows that long-distance scrambling does not affect scope:

[1] This paper focuses on long-distance scrambling out of finite clauses. Regarding scrambling out of non-finite clauses, there has been a controversy with respect to whether it can be A-scrambling. Based on binding facts, Nemoto (1993) argues that scrambling out of non-finite clauses can show A-properties. Takano (2010), however, argues that the A-properties of such scrambling arise as a consequence of clause-internal scrambling, arguing that there is no difference between scrambling out of finite clauses and scrambling out of non-finite clauses.

(2) Minnna-e$_1$ dareka-ga   [John-ga   t$_1$ tegami-o   okutta to]   itta.
    everyone-to someone-NOM John-NOM   letter-ACC sent   that said
    '[To everyone]$_1$ someone said that John sent a letter t$_1$.'   ∃ > ∀; *∀ > ∃

A similar asymmetry obtains with binding. Consider the following pattern of licensing of *otagai* 'each other,' which is subject to Condition A:

(3) a. *[Otagai$_i$-no   sensei]-ga   [John-to   Mary]$_i$-o   hihansita.
       each.other-GEN teacher-NOM   John-and Mary-ACC criticized
       'Each other's teachers criticized John and Mary.'
    b. [John-to   Mary]$_i$-o$_1$ [otagai$_i$-no   sensei]-ga   t$_1$ hihansita.
       John-and Mary-ACC each.other-GEN   teacher-NOM   criticized
       '[John and Mary]$_1$, each other's teachers criticized t$_1$.'

(4) *[John-to   Mary]$_i$-o$_1$ [otagai$_i$-no   sensei]-ga   [Bill-ga   t$_1$ hihansita to]   itta.
    John-and Mary-ACC each.other-GEN   teacher-NOM Bill-NOM   criticized that said
    '[John and Mary]$_1$ each other's teachers said that Bill criticized t$_1$.'

(3a) is unacceptable since the anaphor is not c-commanded by its antecedent. In (3b) and (4), this c-command requirement is met as a result of clause-internal and long-distance scrambling, respectively. However, only (3b) is acceptable. This contrast then suggests that only clause-internal scrambling can be A-movement, feeding Condition A: long-distance scrambling necessarily shows A′-properties.

To sum up, we have seen scope and binding facts, which have motivated the A-/A′-distinction between clause-internal and long-distance scrambling. In the next section, based on these diagnostics, we present two cases of scrambling that take place within a clause, but still show obligatory A′-properties.

3. Clause-internal but A′-scrambling
3.1. LBE

Though Japanese has been regarded as a language which disallows LBE, Takahashi & Funakoshi (2013) and Shiobara (2017) show that there are acceptable cases of LBE. For example, they note that LBE is possible when the extracted element is a PP:[2]

(5) a. Dare-kara-no$_1$ Taro-ga   [t$_1$ tegami]-o suteta-no?
       who-from-GEN Taro-NOM   letter-ACC discarded-Q
       '[From who]$_1$, Taro discarded [a letter t$_1$]?'   (Takahashi & Funakoshi, 2013:237)
    b. ?Hanako-kara-no$_1$ Taro-ga   [t$_1$ tegami]-o suteta.
       Hanako-from-GEN Taro-NOM   letter-ACC discarded
       '[From Hanako]$_1$, Taro discarded [a letter t$_1$].'

Given this point, consider example (6), where a subject and a genitive PP are quantificational:

(6) a. Dareka-ga   [minna-e-no   tegami]-o kaita.
       someone-NOM   everyone-to-GEN letter-ACC wrote
       'Someone wrote [a letter to everyone].'   ∃ > ∀; *∀ > ∃
    b. ?Minna-e-no$_1$ dareka-ga   [t$_1$ tegami]-o kaita.
       everyone-to-GEN someone-NOM   letter-ACC wrote
       '[To everyone]$_1$ someone wrote [a letter t$_1$].'   ∃ > ∀; *∀ > ∃

(6a) is a base-line sentence with the subject taking wide scope. (6b) involves PP-LBE. Crucially, the subject still scopes over the PP-genitive. This means that like scrambling out of finite clauses, LBE does

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[2] Note that the PP's in (5) are marked with the genitive marker -*no*. Since PP's which originate within noun phrases bear the genitive marker in Japanese (Kitagawa & Ross 1982), it seems safe to assume that the PP's in (5) are base-generated within the noun phrases.

not affect scope. Note that movement of the PP in general can in principle affect scope. Example (7) involves noun phrase-internal scrambling of this PP, showing that it can affect scope:

(7) a. [Dareka-kara-no   minnna-e-no   tegami](-o John-ga   uketotta.)
       someone-from-GEN everyone-to-GEN letter-ACC John-NOM received
       '(John received) [a letter from someone to everyone].' $\exists > \forall$; *$\forall > \exists$

   b. [Minnna-e-no$_1$ dareka-kara-no t_1 tegami](-o John-ga   uketotta.)
       everyone-to-GEN someone-from-GEN   letter-ACC John-NOM received
       lit. '(John received) [a letter [to everyone]$_1$ from someone t_1].' $\exists > \forall$; $\forall > \exists$

The contrast between (6b) and (7b) then indicates that whether scrambling in question affects scope depends on whether it crosses a noun phrase-boundary: it can affect scope if it takes place within a noun phrase, but it cannot if it takes place across a noun phrase. Note that scrambling in (6b) clearly takes place within a clause; still it can only be A′-scrambling. This state of affairs suggests that a noun phrase-boundary as well as a clause-boundary is important in determining the A-/A′-distinction. Crossing both clause- and noun phrase-boundaries forces A′-scrambling; A-scrambling cannot cross either.

     This point is further confirmed by binding. Consider (8):

(8) a. *Otagai$_i$-no   sensei-ga   [[John-to   Mary]$_i$-kara-no tegami]-o yonda.
       each.other-GEN teacher-NOM   John-and Mary-from-GEN letter-ACC read
       'Each other's teacher read [letters from John and Mary].'

   b. *[[John-to   Mary]$_i$-kara-no]$_1$ [otagai$_i$-no   sensei]-ga   [t_1 tegami]-o yonda.
       John-and Mary-from-GEN   each.other-GEN teacher-NOM   letter-ACC read
       '[From John and Mary]$_1$ each other's teacher read [letters t_1].'

(8a) is ill-formed since the anaphor is not c-commanded by its antecedent. (8b) shows that LBE cannot feed anaphor binding. Again, the PP moves within a clause but shows A′-properties.[3]

3.2. Movement of a conjunct

     Although it has been widely assumed since Ross (1967) that extraction out of a coordinate structure is universally banned (the Coordinate Structure Constraint: CSC), Yatabe (2003) and Oda (2017) show that movement of a conjunct out of a coordinate structure is allowed in Japanese. They provide examples like (9), where the first conjunct with the conjunction *to* is moved out of the coordinated noun phrases:

(9) a. ?Kyoodai-to$_1$ kanojo-wa [t_1 Toodai]-ni   akogareteiru.
       Kyoto.University-and she-TOP   Tokyo.University-DAT admire
       lit. '[Kyoto University and]$_1$ she admires [t_1 Tokyo University].'

   b. (?)Nani-to$_1$ Taro-ga   [t_1 mizu]-o   katta-no?
       what-and Taro-NOM   water-ACC bought-Q
       lit. '[What and]$_1$ did Taro buy [t_1 water]?'   (Oda, 2017:344)

Consider now (10), where a matrix subject and the first conjunct within the object are quantifiers:

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[3] Takahashi & Funakoshi (2013) also argue that Japanese LBE is A′-movement. They provide (i), which indicates that LBE shows a weak crossover effect, another A′-characteristic (Takahashi & Funakoshi, 2013:243):

(i) a. *Kinoo   soko$_i$-no syain-ga   [dono-kaisya$_i$-kara-no   syootaizyoo]-o uketotta-no?
       yesterday it-GEN   employee-NOM which-company-from-GEN invitation-ACC received-Q
       lit. 'Its$_i$ employees received [invitations from which company$_i$] yesterday?'

   b. *[Dono-kaisya$_i$-kara-no]$_1$ kinoo   soko$_i$-no syain-ga   [t_1 syootaizyoo]-o uketotta-no?
       which-company-from-GEN yesterday it-GEN   employee-NOM   invitation-ACC received-Q
       lit. '[From which company$_i$]$_1$ its$_i$ employees received [invitations t_1] yesterday?'

(10) a. Dareka-ga   [san-bon-izyoo-no   ronbun-to hon]-o   yonda.
        someone-NOM   three-CL-more.than-GEN paper-and book-ACC read
        'Someone read [[more than three papers] and books].' $\exists$ >more than 3; *more than 3> $\exists$

     b. ?[San-bon-izyoo-no   ronbun-to]$_1$ dareka-ga   [t$_1$ hon]-o   yonda.
        three-CL-more.than-GEN paper-and   someone-NOM   book-ACC read
        lit. '[More than three papers and]$_1$ someone read [t$_1$ books].' $\exists$ >more than 3;*more than 3> $\exists$

In (10b), the first conjunct is moved out of the coordinated structure. Still, (10b) is unambiguous just like (10a) even though the first conjunct is scrambled over the subject clause-internally. Movement of a conjunct is thus another case of clause-internal scrambling with obligatory A′-properties.

     Facts regarding binding lead us to the same conclusion. Consider (11), where an anaphor within the subject is intended to be bound by the first conjunct within the object:

(11)   a. *Otagai$_i$-no   sensei-ga   [karera$_i$-to John]-o   hihanshita.
        each.other-GEN teacher-NOM   them-and John-ACC criticized
        'Each other$_i$'s teacher criticized [them$_i$ and John].'

     b. *[Karera$_i$-to]$_1$ otagai$_i$-no   sensei-ga   [t$_1$ John]-o   hihanshita.
        them-and   each.other-GEN teacher-NOM   John-ACC criticized
        lit. '[Them$_i$ and]$_1$ each other$_i$'s teacher criticized [t$_1$ John].'

(11) shows that movement of the conjunct cannot feed binding. This is expected if the movement in question is necessarily A′-scrambling.[4]

     To summarize so far, we have seen that scrambling involving LBE and movement of a conjunct necessarily exhibit A′-properties although they take place clause-internally. The data presented in this section indicate that whether scrambling crosses a clause-boundary or not is not sufficient to characterize the A-/A′-distinction in Japanese scrambling. LBE is a clear instance of scrambling out of a noun phrase. Note that scrambling of a conjunct out of a coordinated noun phrase also involves scrambling out of a noun phrase, given that the whole coordinate structure also acts as a noun phrase. We thus put forth the generalization in (12) regarding Japanese scrambling:

(12)   Scrambling out of clauses and scrambling out of noun phrases are necessarily A′-scrambling.

In the next section, we propose a phase-based characterization of A-/A′-distinction to account for the relevant cases of scrambling in a unified way.

4. Proposal

     We argue that the generalization established above can be deduced based on the notion of phases (Chomsky, 2000, 2001). Specifically, we propose that scrambling shows A-properties when it takes place within a transfer domain, while scrambling shows A′-properties when it crosses a transfer domain (see Miyagawa 2010:115-116 for a similar idea). This is illustrated in (13), where H is a phase head and its sister (shaded) is a transfer domain:

(13)   a.   [$_{HP}$ H [. . . XP . . . t$_{XP}$ . . .]]   b.   [$_{HP}$ XP H [. . . t$_{XP}$ . . .]]   H: phase head
                ↑___ A ___| ↑___ A′ ___|

We adopt the contextual approach to phasehood from Bošković (2014), where the highest projection in the extended domain of a lexical category and the highest clausal projection function as phases. Using the scope facts, we illustrate how the proposed analysis correctly predicts the A-/A′-properties of scrambling.

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[4] Note that the first conjunct does show A-properties in its base position, prior to extraction out of the coordination, as shown by anaphor binding in (i) (see also Kasai & Takahashi 2002):

(i)   [Karera$_i$-to otagai$_i$-no   hahaoya]-ga gakkoo-ni   itta.
     they-and   each.other-GEN mother-NOM school-DAT went
     lit. '[They$_i$ and each other$_i$'s mother] went to school.'

Consider first LBE. Following Takahashi (2011), we assume that noun phrases in Japanese have the structure in (14), where there is a K(=Case)P on top of NP and KP is a phase (as the highest phrase here):

(14) $[_{KP} [_{NP} (PP) N] K]$

Separate projections for NP and KP in Japanese are motivated by Particle-Stranding Ellipsis, where only Case-particles appear on the surface, as shown in (15) (Sato & Ginsburg, 2007; Goto, 2012). This can be accounted for if NP and KP are independent projections and the former is deleted here:

(15) A. John-o   doo sita-no?   B. [*e*]-o   kubinisita-yo.
         John-ACC how did-Q   -ACC   fired-SFP
         'What did you do to John?'   'I fired John.' (adapted from Goto 2012)

Given this structure of noun phrases, consider the derivation of LBE ((6b)), a case of extraction of a PP from a noun phrase. Given the Phase Impenetrability Condition (Chomsky, 2000), LBE must involve a movement to the edge of KP, and then movement to the edge of the clause. Since the movement to the edge of KP is scrambling that crosses a transfer domain (i.e. NP), as shown in (16), the present analysis predicts that PP-LBE will show A′-properties when it crosses the subject.[5] This is why scope does not change in (6b). On the other hand, scrambling within the noun phrase in (7b) involves scrambling within NP, as shown in (17), hence it can affect scope:

(16) $[_{CP} \ldots PP\ Subj \ldots [_{KP} t_{PP} [_{NP} t_{PP} N]K] \ldots C]$ (17) $[_{KP} [_{NP} PP_2\ PP_1\ t_{PP2} N]K]$

Consider next scrambling of a conjunct. We assume the coordinated NP's (i.e., ConjP) to be the complement of the phase head K, as illustrated in (18):

(18) $[_{KP} [_{ConjP} NP [_{Conj'} Conj^0 NP] K]$

That NP's, not KP's, are conjoined is supported by the fact that the first conjunct cannot be case-marked:

(19) *Bill-ga   John-o   to Mary-o   syootaisita.
      Bill-NOM John-ACC and Mary-ACC invited
      'Bill invited John and Mary.'

This structure is also motivated by the fact that conjoined NP's can be targeted by Particle-Stranding Ellipsis, as in (20), which, as discussed above, elides the NP complement of K.

(20) A. [Bob-to   John]-o   doo sita-no?   B. [*e*]-o   kubinisita-yo.
         Bob-and John-ACC how did-Q   -ACC   fired-SFP
         'What did you do to Bob and John?'   'I fired Bob and John.'

Consider now the derivation of (10b), involving movement of a conjunct. Following Oda (2017) we assume that the Conj head *to* 'and' encliticizes to the first conjunct NP_1, as in (21b).[6] Scrambling first moves the complex NP_1-*to* to the edge of KP out of ConjP, and then to the clause-initial position as in (21c). Scrambling out of the coordinate structure thus has to cross a transfer domain (ConjP, which is the complement of the phase head K) and hence is necessarily A′-scrambling, which does not affect scope.

(21) a. $[_{KP} [_{ConjP} NP_1 [to\ NP_2]]K]$ b. $[_{KP} [_{ConjP} NP_1\text{-}to [t_{to} NP_2]]K]$
      c. $[_{CP} \ldots NP_1\text{-}to\ Subj \ldots [_{KP} t_{NP1} [_{ConjP} t_{NP1} [t_{to} NP_2]]K] \ldots C]$

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[5] Here we assume the ban on improper movement, i.e., the ban on A′-movement followed by A-movement. Since scrambling to the edge of KP is A′-scrambling, the following scrambling also has to be A′.

[6] As discussed in Oda (2017), this is necessary to circumvent the CSC.

Finally consider traditional clause-internal scrambling, which can be A-scrambling ((1b)). We tentatively suggest that clause-internal scrambling can show A-properties because there is an extended projection of the verb above vP (e.g. VoiceP or AspectP) (Collins, 2005; Bošković, 2014), and that this XP constitutes a phase (as the highest projection in the extended domain of the verb). The reason why clause-internal scrambling can be A-scrambling, hence can affect scope, is that the scrambled phrase can move to the edge of the highest extended projection in the VP domain through the edge of vP, as in (22b). When PP moves to the edge of vP, PP is scrambled within a transfer domain (vP) and c-commands Ext(ernal argument), being able to scope over it:

(22)   a. $[_{XP} [_{vP}$ Ext $[_{VP}$ PP V]v]X]   b. $[_{XP}$ PP $[_{vP}$ t_{PP} Ext $[_{VP}$ t_{PP} V]v]X]

The current analysis also allows scrambling of an internal argument to directly target the edge of XP, without passing through the edge of vP. We suggest that clause-internal scrambling can be A′-scrambling because in this derivation it crosses a transfer domain in one step, as in (23). That such scrambling can be indeed A′-scrambling is shown by (24) (Saito, 1992; Tada, 1993). (24) would be incorrectly ruled out as a violation of Condition C if clause-internal scrambling were necessarily A-scrambling:

(23) $[_{XP}$ PP $[_{vP}$ Ext $[_{VP}$ t_{PP} V]v]X]

(24) $[\text{Zibunzisin}_i]$-o$_1$ John$_i$-ga t_1 hihansita.
       self-ACC   John-NOM   criticized
       'Himself$_i$, John$_i$ criticized.'

5. Conclusion

This paper has examined LBE and movement of a conjunct in Japanese and has shown that these types of scrambling are necessarily A′-scrambling. Based on this, we have concluded that not only scrambling out of clauses, but also scrambling out of noun phrases is necessarily A′-scrambling. To explain the new data as well as the traditional distinction between clause-internal and long-distance scrambling in a unified way, we have proposed a phase-based characterization of the A-/A′-distinction. The present paper has focused on Japanese scrambling, leaving examination of scrambling in other languages from this perspective for future research.

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